ABSTRACT

The present invention provides for the generation of a controllable source of single photons generated one at a time using optical pumping of a single molecule at room temperature. A single fluorescent molecule is pumped by a light source so that the molecule is placed in its electronic excited state with high probability. The molecule then de-excites via the emission of a single photon, which can be collected by a means for collecting. The room temperature source of single photons is far more convenient and therefore more widely applicable. A high probability of single-photon emission for each incident pump pulse is provided, a property which is useful for transmission of sensitive data bits by the methods of quantum cryptography.